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BUSINESS IN NEBRASKA

June 1985
Vol. 40 No. 489

Prepared by the Bureau of Business Research, 200 College of Business Administration, University of Nebraska, Lincoln, NE 68588-0406, 402/472-2334

NEBRASKA ECONOMIC INDEXES

Analysts use indicators which are published monthly by the U.S. Department of Commerce to monitor current activity and forecast changes in the performance of the economy. The composite indexes of leading, coincident, and lagging economic indicators are the most widely recognized and used. The news media swiftly report and analyze month-to-month changes of the leading index, because of its impact on the projections of economic agents of future changes in business activity.

Many states and metropolitan statistical areas (MSAs) rely on the national leading index as an early warning signal of changes in local business activity. Movements in the local economy do not always, however, parallel those of the national economy. Consequently, many states and MSAs use economic indicators tailored to their locales.

This article provides a nontechnical exposition of economic indicators and presents preliminary results of a project to construct composite economic indicators for Nebraska. Further exploration, testing, and refinement will probably yield indexes that will provide a meaningful and timely assessment of Nebraska business activity.

THE BUSINESS CYCLE AND ECONOMIC INDICATORS

The American economy is subject to recurring fluctuations in the level of economic activity. Upswings and downswings in business activity are collectively known as the "business cycle." Upper and lower turning points (peaks and troughs) divide business cycles into periods of economic expansion and contraction. Since 1948, business cycle expansions have ranged in length from 12 months to 106 months, while contractions have varied from 6 months to 16 months. The current expansionary period has lasted almost 30 months.

The duration and intensity of individual business cycles fluctuate considerably. Severe and lengthy downturns in economic activity are classified as depressions, and less drastic declines in business activity are dubbed recessions.[1] Periods of economic contraction are characterized by negative growth in real Gross National Product and high levels of unemployment.

Post World War II declines in economic activity have been minor compared to the Great Depression of the 1930s. From 1948 to the present, the American economy has experienced eight recessions with an average span of 11 months. Periods of growth, excluding the current period, have averaged 46 months in length.

Economic indicators (special economic characteristics) are procured and maintained in order to establish turning points of past recessions and anticipate those of future recessions. Economic characteristics are termed indicators because of their relationship and sensitivity to the business cycle.

Economic indicators can be leading, coincident, or lagging. Leading indicators anticipate the business cycle; they decline before the peak of expansion and increase before the trough of recession. Leading indicators are monitored closely, as they can signal the onset of expansion or recession. Coincident indicators summarize the present state of economic affairs and are used (after the fact) to date peaks and troughs of business cycles. Lagging indicators confirm or refute information provided by coincident indicators. Figure 1 summarizes the behaviors of the leading, coincident, and lagging economic indicators.[2]

A single indicator can serve as a leading, coincident, or lagging economic indicator. Individual indicators, however, usually do not represent a broad spectrum of economic activity. If several indicators exhibit the same pattern relative to the business cycle and represent a diversity of economic activity, then they should perform better collectively than individually. This contention has

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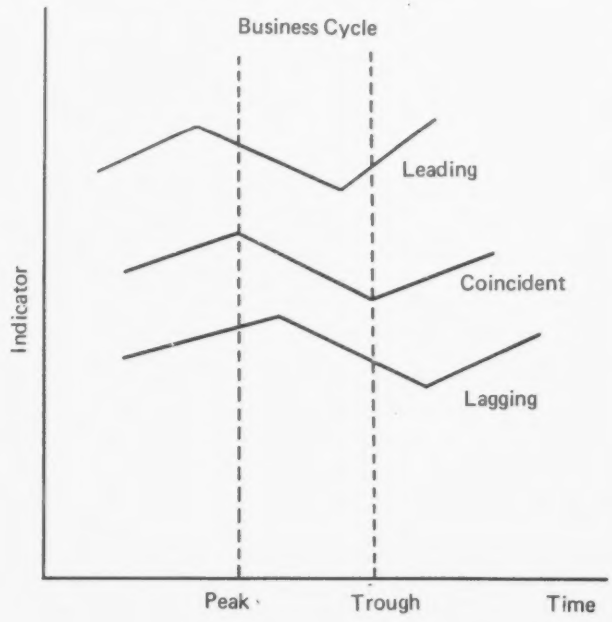
FIGURE 1
Behavior of Economic Indicators



(continued from page 1)
been confirmed in practice, and has resulted in the construction of composite indexes. When carefully selected indicators of the same type (leading, coincident, or lagging) are weighted and combined, the result is a single composite index.

Indicators used to construct composite indexes are selected on the basis of how well they perform compared with the business cycle. The U.S. Department of Commerce has established the following criteria for component indicators:

1. Behavior historically consistent with the business cycle
2. No predominance of noncyclical (random) movements
3. Timely reporting of new and revised data
4. No large revisions necessary
5. Economic relevance

At this time, the Commerce Department publishes 111 individual time series classified as business cycle indicators by economic process. Analysts have selected a subset of 22 indicators to construct the three national composite indexes. For more information, see Ratti, who reviews and analyzes national composite indexes, the methodology of constructing indexes, and several numerical examples.[3]

NEBRASKA COMPOSITE ECONOMIC INDEXES

The Bureau of Business Research is currently developing composite economic indexes for Nebraska. The initial project phase emphasizes construction of (1) a composite index of coincident indicators to date turning points of Nebraska business cycles, and (2) a composite index of leading indicators to predict future turning points of business cycles. Simplicity and effectiveness are major considerations in formulating composite indexes.

Several problems were encountered during construction of the state indexes: (1) The plethora of economic indicator data at the national level is nonexistent at the state level; (2) The length of most Nebraska data series do not allow meaningful analysis of state business cycles; and (3) For some economic processes, national indicators must be used as proxies for unrecorded state indicators.

COMPOSITE INDEX OF COINCIDENT INDICATORS

The Nebraska composite index of coincident indicators summarizes current economic activity and dates the peaks and troughs of Nebraska business cycles. Nebraska indicators used to construct the composite index are listed below:

Component Indicator	Data Source
Nonfarm Wage and Salary Employment	Nebraska Department of Labor
Industrial Electricity	U.S. Department of Energy Energy Information Office
Deflated Retail Sales	Nebraska Department of Revenue

Nonfarm wage and salary employment represents economic activity in diverse sectors of the economy. Industrial electricity is used as an indicator of industrial production. Retail sales, in real terms, reflect current economic conditions as shown by consumer confidence and buying power. Component indicators are

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FIGURE 2
Nebraska Index of Coincident Economic Indicators
Index (1977=100)

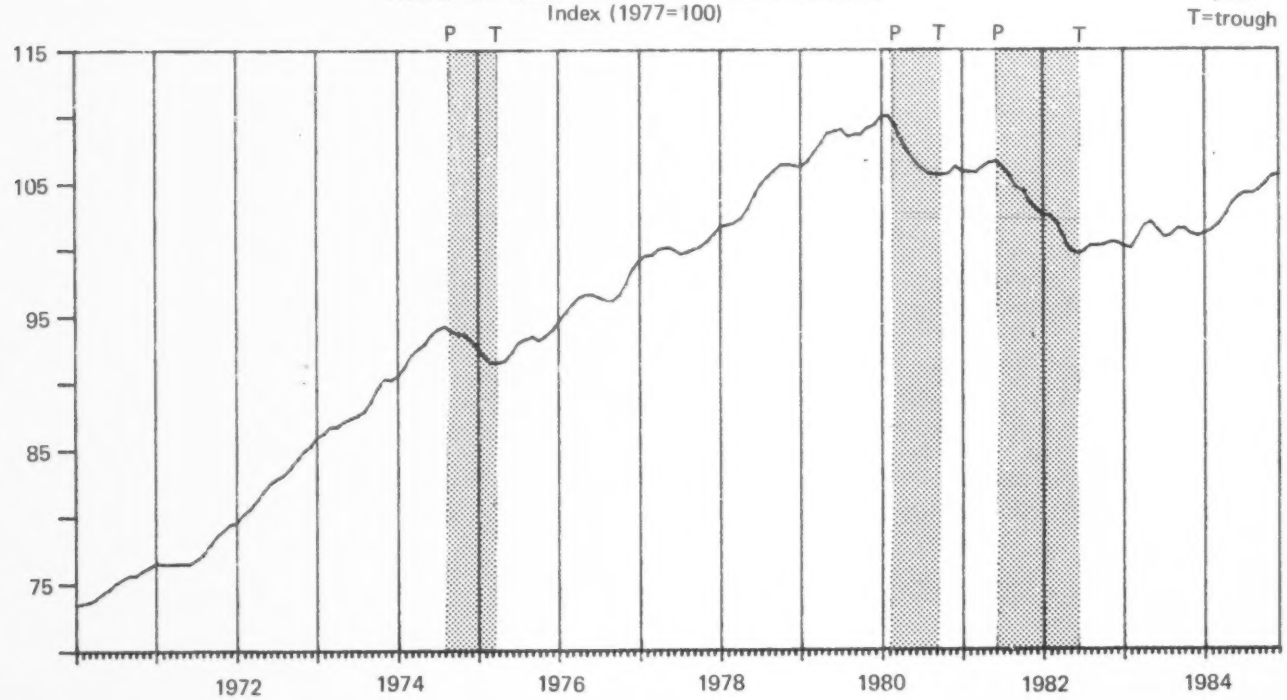


FIGURE 3
Nebraska Index of Leading Economic Indicators
Index (1977=100)

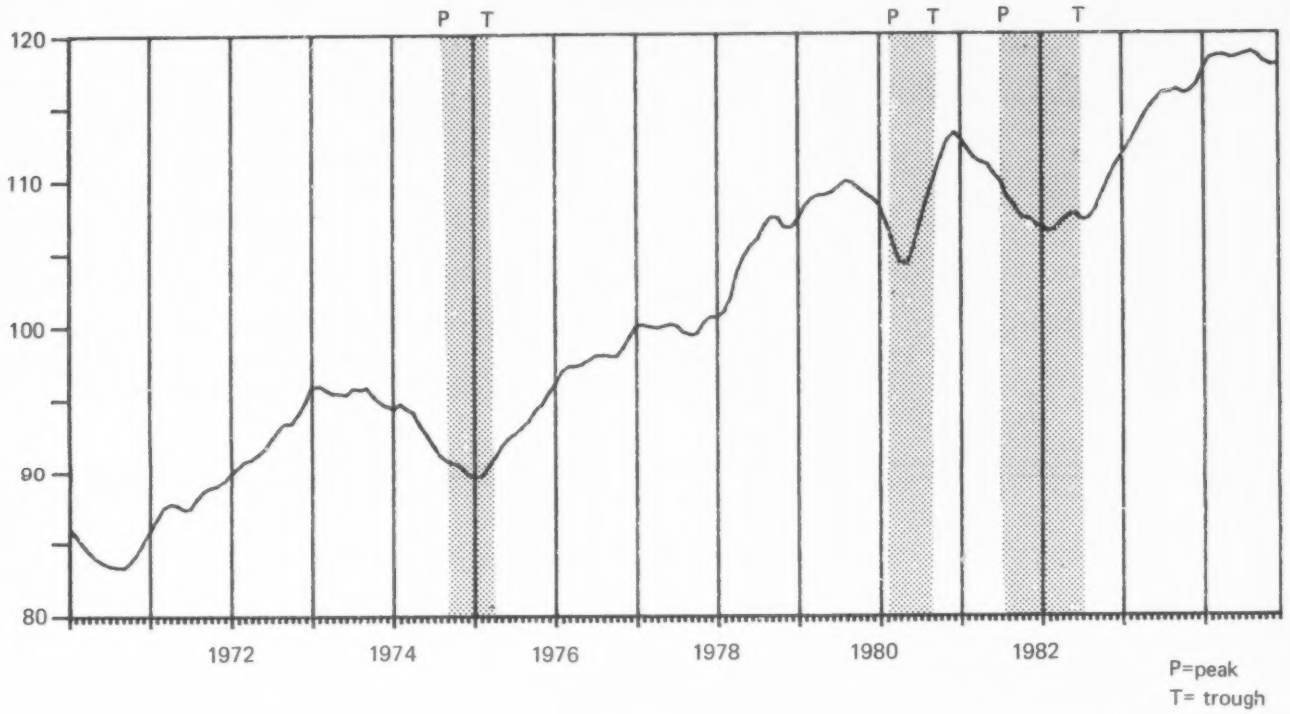
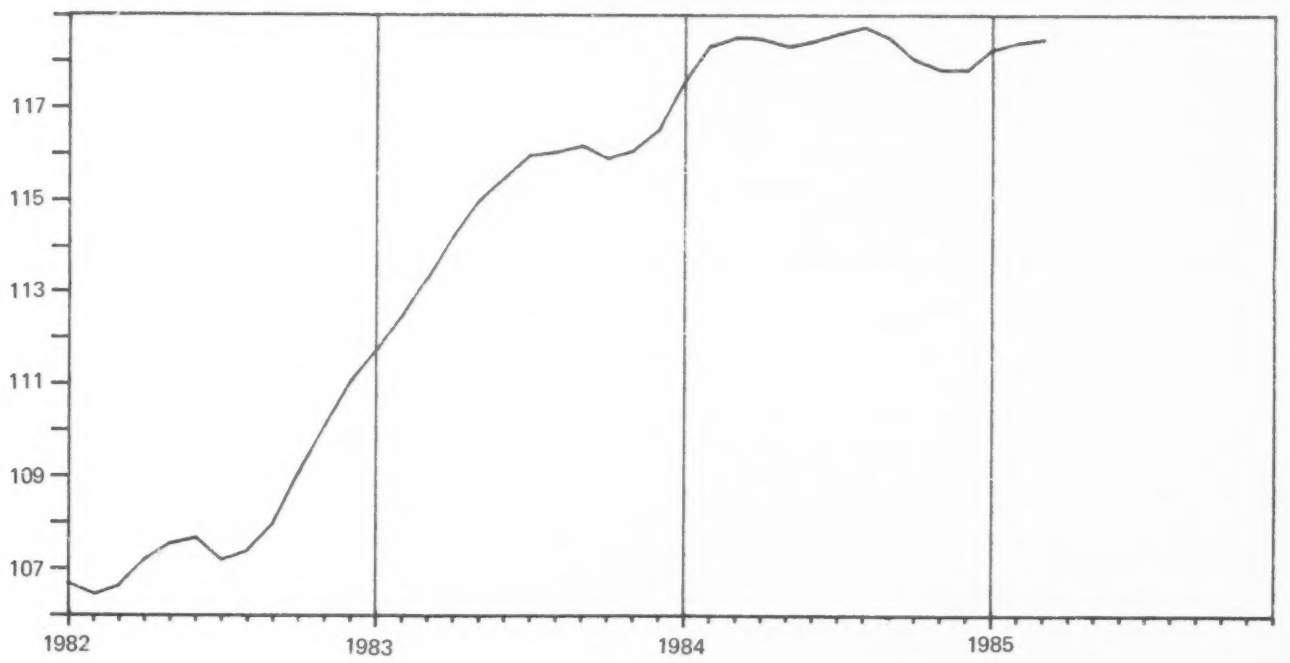


FIGURE 4
Nebraska Index of Leading Economic Indicators
index (1977=100)



Review and Outlook

Nebraska's nonagriculture sector of the economy was virtually unchanged on a month-to-month basis according to the Bureau of Business Research's physical volume index. The nonagriculture sectors recorded a 0.1 percent decline January-February 1985. Once again, cash receipts were not available for agriculture commodities from the U.S. Department of Agriculture for Nebraska and the United States.

A review of the month's activity among the nonagriculture sectors reveals a mixed picture. Construction and manufacturing recorded declines, and distribution and government rose.

The construction component of the net physical volume index dropped 1.9 percent. This component of the index has been seasonally adjusted, so the decrease reflects a slowdown in construction activity in the state. Long term and short term interest rates have declined since this measure was taken--an improving construction sector in Nebraska can be anticipated.

The manufacturing sector fell 0.6 percent January-February 1985. Manufacturing employment and output have changed little in the past twelve months, a reflection of the weak agriculturally based economy.

The distribution component of the Bureau's index gained 0.1 percent, and the government component rose 0.4 percent. These changes are not statistically significant and indicate that Nebraska economic output has changed little. The government

(continued on page 5)

Notes for Tables 1 and 2: (1) The "distributive" indicator represents a composite of wholesale and retail trade; transportation, communication and utilities; finance, insurance, and real estate; and selected services. (2) The "physical volume" indicator and its components represent the dollar volume indicator and its components adjusted for price changes using appropriate price indexes--see Table 5, page 5.

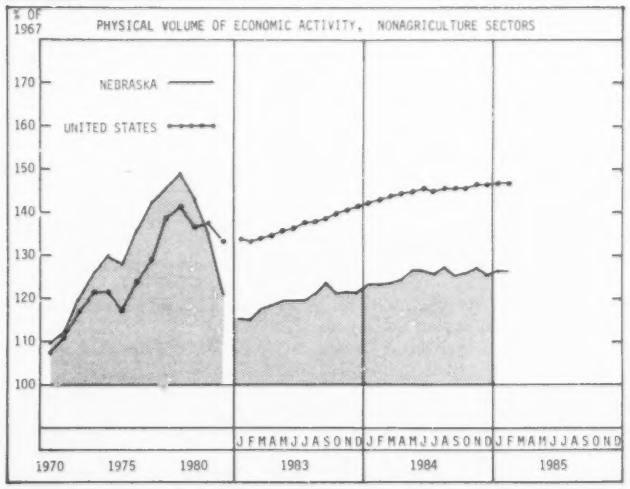
ECONOMIC INDICATORS: NEBRASKA AND UNITED STATES

1. CHANGE FROM PREVIOUS YEAR

February 1985	Current Month as Percent of Same Month Previous Year		1985 to date as percent of 1984 to date	
Indicator	Nebraska	U.S.	Nebraska	U.S.
Dollar Volume	NA	NA	NA	NA
Agricultural	NA	NA	NA	NA
Nonagricultural	106.6	106.5	106.7	106.5
Construction	99.2	106.7	101.6	109.5
Manufacturing	104.3	102.5	104.8	103.5
Distributive	105.9	107.9	105.9	107.4
Government	114.9	106.6	114.8	106.6
Physical Volume	NA	NA	NA	NA
Agricultural	NA	NA	NA	NA
Nonagricultural	102.9	103.0	103.0	103.0
Construction	95.0	102.2	97.2	104.8
Manufacturing	103.9	101.9	104.0	102.5
Distributive	102.1	104.1	102.2	103.6
Government	106.1	101.0	105.9	101.0

2. CHANGE FROM 1967

	Percent of 1967 Average	
Indicator	Nebraska	U.S.
Dollar Volume	NA	NA
Agricultural	NA	NA
Nonagricultural	374.3	441.3
Construction	264.0	426.9
Manufacturing	372.0	324.9
Distributive	380.3	506.0
Government	414.7	447.9
Physical Volume	NA	NA
Agricultural	NA	NA
Nonagricultural	126.7	146.9
Construction	74.6	120.6
Manufacturing	149.7	127.9
Distributive	119.8	159.4
Government	152.4	149.2

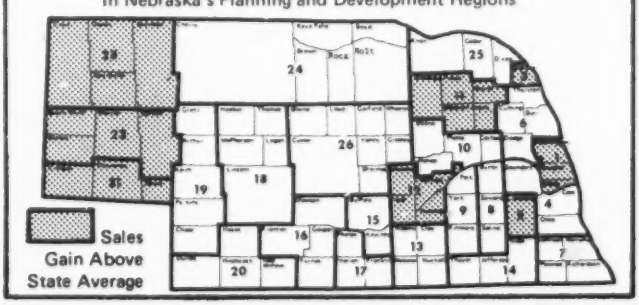


3. NET TAXABLE RETAIL SALES OF NEBRASKA REGIONS AND CITIES

Region Number[1] and City	City Sales[2] Feb. 1985 as percent of Feb. 1984	Sales in Region[2] Feb. 1985 as percent of Feb. 1984	Sales in Region[2] 1985 to date as percent of 1984 to date
The State	106.8	103.6	NA
1 Omaha	116.6	112.5	NA
Bellevue	128.8	NA	NA
Blair	98.2	NA	NA
2 Lincoln	107.8	105.3	NA
3 So. Sioux City	111.4	104.6	NA
4 Nebraska City	103.2	92.0	NA
6 Fremont	123.1	103.1	NA
West Point	97.7	NA	NA
7 Falls City	88.8	93.8	NA
8 Seward	96.0	87.5	NA
9 York	96.7	92.9	NA
10 Columbus	96.4	96.0	NA
11 Norfolk	108.1	104.5	NA
Wayne	120.4	NA	NA
12 Grand Island	110.6	104.7	NA
13 Hastings	102.6	95.4	NA
14 Beatrice	84.9	86.8	NA
Fairbury	105.1	NA	NA
15 Kearney	92.2	93.2	NA
16 Lexington	110.7	101.6	NA
17 Holdrege	104.0	95.0	NA
18 North Platte	97.8	94.8	NA
19 Ogallala	114.7	88.4	NA
20 McCook	107.9	97.8	NA
21 Sidney	104.6	104.1	NA
Kimball	118.1	NA	NA
22 Scottsbluff/Gering	108.3	105.5	NA
23 Alliance	120.2	107.2	NA
Chadron	119.3	NA	NA
24 O'Neill	114.1	100.7	NA
25 Hartington	110.0	102.0	NA
26 Broken Bow	117.9	98.1	NA

[1] See region map below.
[2] Sales on which sales taxes are collected by retailers located in the state. Region totals include motor vehicle sales; city totals exclude motor vehicle sales.
Compiled from data provided by Nebraska Department of Revenue.

February 1985 as Percent of February 1984
In Nebraska's Planning and Development Regions



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component of the Nebraska economy is not comparable with that of other states, because the government sector includes public power. In other states, power is part of the service or distribution sector.

Nebraska retail sales in February totaled $627 million, up from $605 million in February of 1984. When adjusted for price changes, total retail sales increased 1.1 percent. The commodity component of the consumer price index rose a scant 2.0 percent February 1984 to February 1985. The commodity component of the consumer price index is growing at a rate less than half that for the total consumer price index.

Nonmotor vehicle sales in February 1985 were ahead of year ago levels, but motor vehicle sales were down. Nonmotor vehicle sales were $560 million, compared with $525 million one year ago. Motor vehicle sales, on the other hand, fell to $66.5 million in February 1985, compared with $80.5 million in February 1984. Retail sales were stronger in the metropolitan Omaha and Lincoln areas. In Omaha, sales advanced 16.6 percent above year ago levels, while in Lincoln sales expanded 7.7 percent. Fremont, South Sioux City, Wayne, Lexington, Ogallala, Kimball, Alliance, and O'Neill also recorded strong February 1985 sales compared with one year previous.

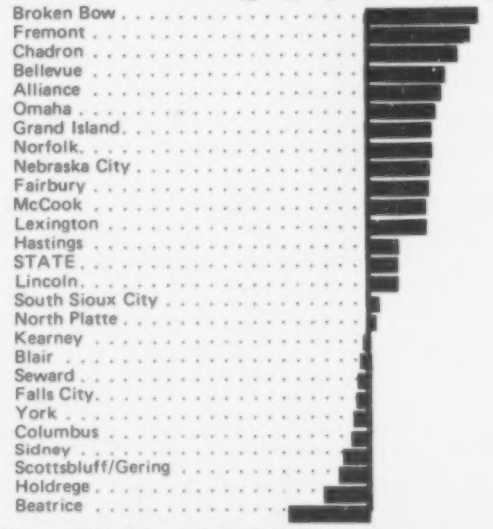
Broken Bow led Nebraska cities with a 13.4 percent increase in its city business index. Fremont ranked second with a 12.3 percent gain, and Chadron finished third with a 10.8 percent rise in its city business index.

The dichotomy in Nebraska's economy continues, with an advancing metropolitan area and a faltering agriculture sector. Income, employment, and output are increasing in the metropolitan Lincoln and Omaha area, but outstate Nebraska output is virtually unchanged. Some nonmetro areas show small gains; in balance, however, the outstate region grew little in income, output, and employment during the past twelve months.

Declining interest rates will have a positive impact upon the state economy. The cost of production in the agriculture and nonagriculture sector will be reduced. Net savers, however, will realize a reduction in their incomes. Borrowers are expected to benefit more than savers, since the return on savings frequently does not enter the consumption stream.

In the coming twelve months, the national economy is expected to expand two to three percent. The metropolitan area of Nebraska will probably match this increase in output, but the nonmetro portions will see no growth in their local economies

DONALD E. PURSELL



Source: Table 3 (page 4) and Table 4 below.

4. February 1985 CITY BUSINESS INDICATORS

The State and Its Trading Centers	Percent of Same Month a Year Ago		
	Employment[1]	Building Activity[2]	Power Consumption[3]
The State	103.2	107.2	120.0
Alliance	101.5	119.8	120.2
Beatrice	99.6	72.9	125.1
Bellevue	102.2	56.4	126.0
Blair	102.2	100.9	117.8*
Broken Bow	104.4	257.2	114.2
Chadron	116.9	41.3	116.6
Columbus	101.7	92.6	126.4
Fairbury	102.2	306.8	119.3
Falls City	105.4	165.2	106.5
Fremont	102.7	147.3	111.8*
Grand Island	106.7	132.7	107.7
Hastings	101.7	192.6	125.0
Holdrege	101.8	23.9	123.1
Kearney	107.1	120.7	113.1
Lexington	106.3	117.4	103.5
Lincoln	102.6	102.3	120.8
McCook	99.4	284.8	122.3
Nebraska City	106.1	259.6	110.9
Norfolk	109.5	125.6	113.3
North Platte	103.3	124.8	110.5
Omaha	102.2	120.5	124.9
Scottsbluff/Gering	99.6	29.3	NA
Seward	102.0	118.6	115.0
Sidney	99.7	43.2	109.2
So. Sioux City	99.4	58.6	119.9
York	100.7	111.9	114.9

[1] As a proxy for city employment, total employment for the county in which a city is located is used.

[2] Building Activity is the value of building permits issued as spread over an appropriate time period of construction. The U.S. Department of Commerce Composite Construction Cost Index is used to adjust construction activity for price changes.

[3] Power Consumption is a combined index of consumption of electricity and natural gas except in cases marked * for which only one is used.

Source: Compilation by Bureau of Business Research from reports of private and public agencies.

5. PRICE INDEXES

February 1985	Index (1967 = 100)	Percent of Same Month Last Year	Year to Date as Percent of Same Period Last Year*
Consumer Prices	317.4	103.7	103.6
Commodity component	284.0	102.0	102.1
Wholesale Prices	309.2	100.1	100.3
Agricultural Prices			
United States	247.0	93.6	93.4
Nebraska	250.0	96.2	95.6

*Using arithmetic average of monthly indexes.

Sources: Consumer and Wholesale Prices: U.S. Bureau of Labor Statistics; Agricultural Prices: U.S. Department of Agriculture.

(continued from page 2)
weighted equally and combined to form the composite index of coincident indicators. Data from 1970-present were used to construct the coincident index depicted in Figure 2. Shaded areas represent periods of recession, with peaks (P) and troughs (T) as indicated.

Corresponding periods of recession in Nebraska and the United States since 1969 are listed below:

U.S. Recession	Nebraska Recession
Dec. 1969-Nov. 1970	None
Nov. 1973-Mar. 1975	Aug. 1974-Mar. 1975
Jan. 1980-July 1980	Feb. 1980-Sept. 1980
July 1981-Nov. 1982	June 1981-June 1982

According to the state index of coincident indicators, no recession occurred in Nebraska during 1969-1970. Also, the lengthy 1973-1975 national recession was shorter and less severe in Nebraska. The index is roughly coincident--peaks and troughs are subject to revision as work progresses on the index.

COMPOSITE INDEX OF LEADING INDICATORS

The Nebraska composite index of leading economic indicators was constructed using component indicators that lead turning points of the composite coincident index. Individual indicators and their data sources used to construct the Nebraska index are: initial claims for unemployment insurance, Nebraska Department of Labor; prices received for all farm products, Nebraska Crop and Livestock Reporting Service; stock prices of 500 common stocks, Standard and Poor's Corporation; value of let construction contracts, F.W. Dodge Division of McGraw Hill; average weekly earnings in manufacturing, Nebraska Department of Labor.

Except for stock prices, all components are Nebraska indicators. Since monthly money and credit indicators are not available for Nebraska, national proxies are required. Money supply (M2) and stock prices (500 common stocks) were tested; stock prices were chosen as the proxy. The index could be improved in the future by the inclusion of a Nebraska money and credit indicator.

Component indexes were given equal weights and combined to form the Nebraska composite leading index shown in Figure 3. Figure 3 shows clearly that the leading index falls before the peak and rises before the trough of each recession.

Decision rules must be established if the leading index is to be useful. The national leading index uses the "three consecutive declines" rule to predict the onset of a recession; this can result in false signals if declines are small. For the Nebraska economy, the following rule has successfully predicted the last three recessions: "three consecutive declines totaling one percent or more signal the onset of a recession." The average lead time from recognition to commencement of a recession is 4.3 months. Predicting recovery is less precise than predicting a recession, but the following rule has been adopted: "two consecutive increases signal the onset of recovery." The average lead time from recognition to commencement of recovery is less than one month.

During the first half of 1984, the Nebraska leading index flattened and then declined during September, October, and November. The total decline in the leading index from September through November was slightly less than one percent. During December of 1984 and the first three months of 1985, the leading index increased overall (Figure 4). Strict application of the Nebraska rule for predicting the onset of a recession would indicate no economic slump during 1985. The three consecutive declines in the leading index during the last half of 1984 should, however, serve as a warning of possible deteriorating economic conditions during the latter part of 1985.

SUMMARY

This article presents preliminary results--the project to construct composite indexes for Nebraska has been underway since January of 1985. Tests of additional indicators, variation of weighting schemes, and further analysis of turning point dates are slated for the future. By the end of 1985, significant improvements in the Nebraska composite indexes should allow regular publication.

CHARLES L. BARE and MERRILL E. WARKENTIN

[1]"Growth recessions" are periods when economic growth slows without contraction.

[2]Edward Y. George, "New Economic Indicators for El Paso," *Southwest Business and Economic Review*, 18, No. 2 (November 1980), pp. 2-3.

[3]Ronald A. Ratti, "A Descriptive Analysis of Economic Indicators," *Review: Federal Reserve Bank of St. Louis*, 67, No. 1 (January 1985), pp. 14-24.

BUSINESS IN NEBRASKA
PREPARED BY BUREAU OF BUSINESS RESEARCH
Member Association for University Business & Economic Research

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Vol. 40 No. 489 June 1985

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